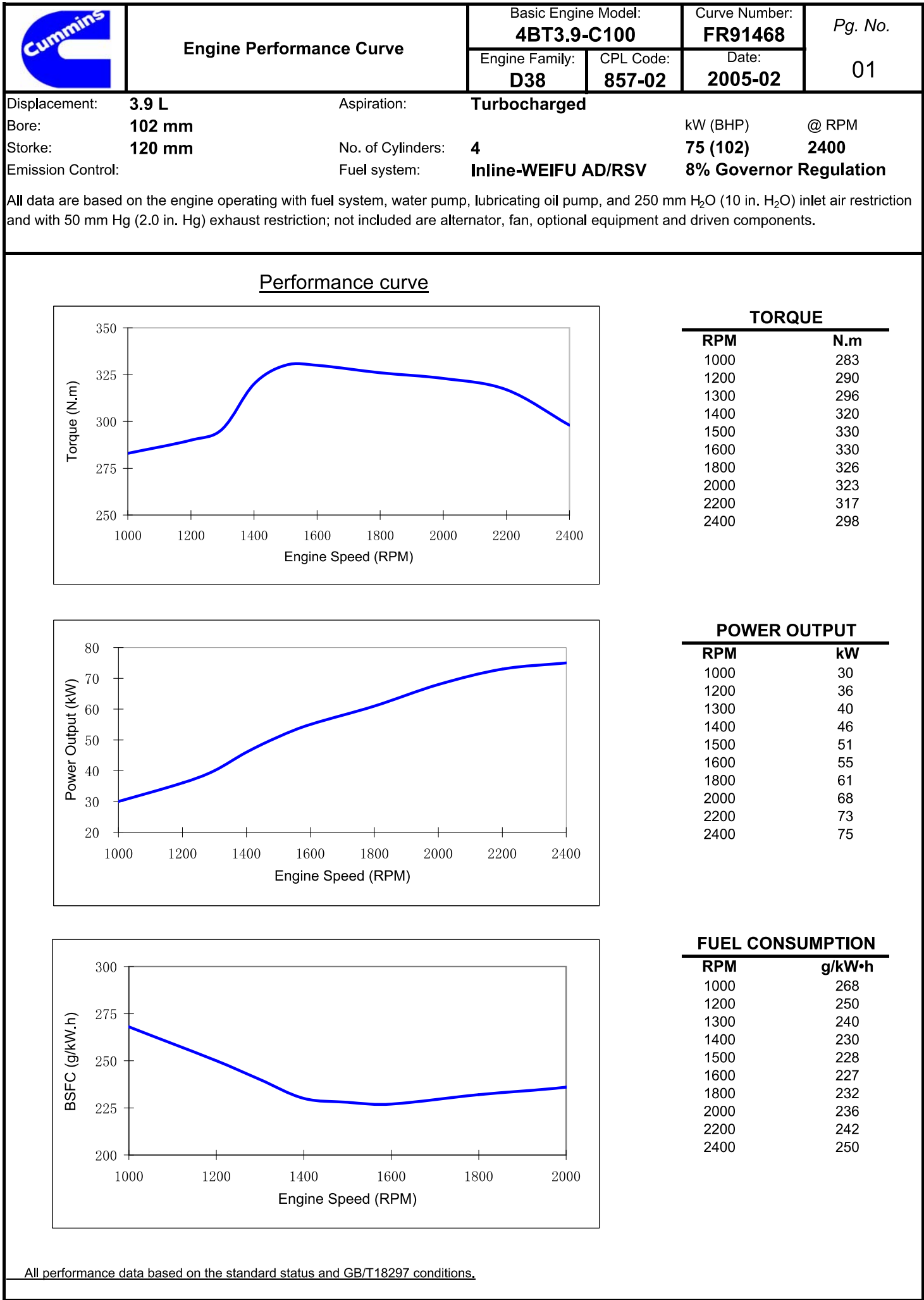


# Cummins Technical



ENGINE MODEL: 4BT3.9-C100  
CURVE & DATASHEET: FR91468

15Feb2005





## Base Engine Data Sheet

Pg. No.

02

ENGINE MODEL:	<b>4BTA3.9-C100</b>	CPL NUMBER:	<b>857- 02</b>	DATE:	<b>Feb05</b>
CONFIGURATION NUMBER:	<b>D382043CX02</b>	CURVE NUMBER:	<b>FR91468</b>		
AFTERCOOLED SYSTEM:	<b>NO</b>	RATED POWER:	<b>102 bhp @ 2400rpm</b>		
FUEL SYSTEM:	<b>Inline - WEIFU AD/RSV</b>		<b>75 kW @ 2400rpm</b>		

### GENERAL ENGINE DATA

Engine Wet Weight (Pricing Configuration).....	-kg	338
Moment of Inertia of Rotating Components (No Flywheel).....	-kg·m <sup>2</sup>	0.143
Center of Gravity from Front Face of Block.....	-mm	262
Center of Gravity above Crankshaft Centerline.....	-mm	160

### ENGINE MOUNTING

Maximum (Static) Bending Moment at Front Support Mounting Surface.....	-N.m	435
Maximum (Static) Bending Moment at Side Pad Mounting Surface.....	-N.m	TBD
Maximum (Static) Bending Moment at Rear Face of Block.....	-N.m	1356
Moment of Inertia of Complete Engine		
— Roll Axis.....	-kg·m <sup>2</sup>	11.1
— Pitch Axis.....	-kg·m <sup>2</sup>	19.1
— Yaw Axis.....	-kg·m <sup>2</sup>	14.7

### EXHAUST SYSTEM

Maximum Back Pressure.....	-mmHg	76
Exhaust Pipe Size Normally Acceptable.....	-mm	75
Maximum Static Supported Weight at the Turbocharger Outlet Flange.....	-N.m	13.5
Exhaust Manifold Insulation Acceptable.....	-Yes/No	No
Turbocharger Insulation Acceptable.....	-Yes/No	No

### AIR INTAKE SYSTEM

Maximum Intake Air Restriction with Heavy Duty Air Cleaner		
— Clean Element.....	-mmH <sub>2</sub> O	381
— Dirty Element.....	-mmH <sub>2</sub> O	635
Minimum Dirt Holding Capacity with Heavy Duty Air Cleaner.....	-g/litre/sec.	53
Maximum Temperature Rise from Ambient to the Inlet of the Turbocharger.....	-°C	17
Maximum Pressure Drop from the Turbocharger Outlet to the Intake Manifold.....	-kPa	NO

### LUBRICATION SYSTEM

Normal Operating Oil Pressure Range.....	-kPa	276 - 345
Maximum Lube Oil Flow for Engine Accessories.....	-litre/min.	4.0
Maximum Sump Oil Temperature.....	-°C	121
Minimum Engine Oil Pressure for Engine Protection Devices:		
— At Rated Speed and Load.....	-kPa	276
— At Torque Peak Speed and Load.....	-kPa	207
— At Low Idle.....	-kPa	69
Minimum Required Lube System Capacity - Sump plus Filters.....	-litre	9.0
By-pass Filtration Required.....	-Yes/No	No
Angularity of Standard Oil Pan: (Values stated are for intermittent operation only):		
— Front Down.....	-°	45
— Front Up.....	-°	45
— Side to Side.....	-°	45



## Base Engine Data Sheet

Pg. No.

03

### COOLING SYSTEM

Coolant Capacity - Engine Only.....	-litre	7.9
Maximum Engine Cooling Circuit External Resistance.....	-kPa	TBD
Minimum Pump Inlet Pressure with Open Thermostat and no Pressure Cap.....	-mmHg	TBD
Maximum Static Head of Coolant Above Engine Crankshaft Centerline.....	-m	TBD
Standard (modulating) Thermostat Range.....	-°C	82-93
Maximum Block Coolant Pressure with Closed Thermostat and no Pressure Cap.....	-kPa	50
Minimum Pressure Cap.....	-kPa	50
Maximum Engine Coolant Temperature at Engine Outlet.....	-°C	100
Maximum Engine Coolant Temperature for Engine Protection Devices.....	-°C	101.6
Minimum Engine Coolant Temperature.....	-°C	71
Minimum Fill Rate.....	-litre/min.	19
Maximum Initial Fill Time.....	-min.	5
Minimum Coolant Expansion Space.....	- %of System Capacity	6
Maximum Deaeration Time.....	-min.	25
Minimum Drawdown.....	— % of Total System Capacity	11%
(Drawdown Must Exceed the Volume Not Filled at Initial Fill & Must Not Include Expansion Space)		
Fan-on Engine Coolant Outlet Temperature.....	-°C	93
Shutter Opening Coolant Outlet Temperature.....	-°C	85
Shutter Opening Intake Manifold Air Temperature.....	-°C	no

### CRANKING SYSTEM

Minimum Battery Capacity - Cold Soak at 0°F (-18°C) or Above	12V	24V
— Engine Only - Cold Cranking Amperes.....	-CCA	800 400
— Engine Only - Reserve Capacity.....	-min.	160 80
Maximum Starting Circuit Voltage Drop @ ----Amperes.....	-Volts	TBD
Minimum Ambient Temperature for Unaided Cold Start.....	-°C (-°F)	-12
Minimum Cranking Speed Required for Unaided Cold Start.....	-rpm	125
Breakaway Torque at Minimum Unaided Start Temperature.....	-N.m(lb.-ft.)	TBD
Cranking Torque at Minimum Unaided Start Temperature.....	-N.m(lb.-ft.)	TBD
Cranking Torque at -10°F.....	-N.m(lb.-ft.)	TBD

### FUEL SYSTEM

Maximum Fuel Flow on the Supply Side of the Fuel Pump.....	-kg/hr	97
Maximum Fuel Inlet Restriction		
— with clean fuel filter.....	-mmHg	102
— with dirty fuel filter.....	-mmHg	203
Maximum Fuel Drain Restriction		
— with check valves.....	-mmHg	N/A
— less check valves.....	-mmHg	510
Maximum Fuel Inlet Temperature.....	-°C	71
Minimum Fuel Tank Air Venting Capability Required at 6 in. H <sub>2</sub> O Back Pressure.....	-litre/hr	340



Low Idle Set Speed.....	-rpm	750
Maximum Governed Speed ( 10% of Rated Torque ) .....	-rpm	2600
Maximum Overspeed Capability.....	-rpm	3750
Maximum altitude limit restriction		
—Continuous.....	--m	TBD
Closed Throttle Torque @ 700 rpm (for 900 rpm Low Idle Speed).....	-N.m	TBD
Throttle Angle		
—High Idle.....	Deg.	102 ±4
—Low Idle.....	Deg.	75± 4
—Delta.....	Deg.	27

**EMISSIONS:**

Estimated Free Field Sound Pressure Level At 15 m (50 ft.) and Full-Load Governed Speed  
(Excludes Noise from Intake, Exhaust, Cooling System and Driven Components)

—Right Side.....	-dBa	TBD
—Left Side.....	-dBa	TBD
—Front.....	-dBa	TBD
—Rear.....	-dBa	TBD

Gaseous Emissions per ISO 8178:

—Weight-Specific NOx.....	g/kW.h	TBD
—Weight-Specific HC.....	g/kW.h	TBD
—Weight-Specific CO.....	g/kW.h	TBD
—Weight-Specific Particulates.....	g/kW.h	TBD

Fuel Rating Option used for these Data: **FR91468**

Engine Speed.....	-rpm
Gross Power Output.....	-kW
Torque.....	-N.m
Intake Manifold Pressure.....	-kPa
Motoring Friction Horsepower.....	-kW
Turbocharger Compressor Outlet Pressure.....	-kPa
Intake Air Flow.....	-litre/sec.
Exhaust Gas Flow.....	-litre/sec.
Compressor Outlet Temperature.....	-℃
Exhaust Temperature .....	-℃
Heat Rejection to Ambient (Dry Manifold).....	-kW
Heat Rejection to Coolant (Dry Manifold).....	-kW
Heat Rejection to Fuel.....	-kW
Engine Coolant Flow.....	-litre/sec.
External Cooling Circuit Resistance .....	-kPa△ P
Altitude Limitations:	
—Intermittent.....	-m
—Continuous.....	-m
Steady State Smoke.....	-Bosch

RATED POWER	MAXIMUM POWER POINT	PEAK TORQUE
2400		1500
75		51
298		330
90		45
16.6		7
90		45
120		68
283		182
N/A		N/A
550		560
10.9		8
50		36
1.0		0.6
3.3		2.0
15.2		15.2
TBD		TBD
TBD		TBD
TBD		TBD

ALL DATA CERTIFIED WITHIN 5%

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

All data is subject to change without notice, sorry for inform.